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Creating a Website by Utilizing Modern Trends – A Case Study for Collins O. Consulting

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Laurea University of Applied Sciences **Abstract**
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In today's web development the importance of beautiful design combined with an excellent user experience has increased immensely. Companies pay attention to their web appearance more than ever to maximize their potential to attract new customers as well as keeping the returning customers. Therefore, a trendy company website has over time proved to be an increasingly important element as companies attempt to establish their presence on the web.

The goal of this thesis was to research the modern trends of web development, especially from the user interface perspective, and create a company website according to the results. The company involved in this project is a start-up IT-consulting company that did not have a website in the beginning of this project, making it a perfect partner for this research. During the project, the design and implementation was planned in cooperation with the customer, combining the research results with the company's requirements.

The implementation of the website was conducted by the student by using modern web design technologies, such as HTML5 and CSS3. The implementation was executed utilizing Adobe CC applications – Muse CC, Photoshop CC, and Illustrator CC. The implementation required knowledge of web design, web technologies, and graphic design skills. As a result of adequate theory base and research, the student was able to create a company website that reflects modern web design trends.

Web Design, Trends, HTML5, CSS3, User Interface

Laurea-ammattikorkeakoulu **Tiivistelmä**
Leppävaara
Tietojenkäsittely

Annika Ryan

Verkkosivuston kehittäminen käyttäen moderneja trendejä – Case Collins O. Consulting

Vuosi 2014 Sivumäärä 43

Nykyajan käyttöliittymäsuunnittelussa ulkonäön ja käyttäjäkokemuksen tärkeys on kasvanut huomattavasti. Yritykset kiinnittävät yhä enemmän huomiota verkko-olemukseensa maksimoidakseen mahdollisuutensa uusien asiakkaiden saavuttamiseen, sekä olemassa olevien asiakkaiden pitämiseen. Tästä johtuen trendikäs verkkosivusto on erittäin tärkeässä osassa yrityksen imagon rakentamisessa.

Opinnäytetyön tavoitteena on tutkia moderneja trendejä verkkosivustojen kehityksessä, etenkin käyttöliittymäsuunnittelun näkökulmasta, ja rakentaa sivusto yritykselle tulosten pohjalta. Projektissa mukana oleva yritys on IT-alalla toimiva konsultointiyritys, jolla ei projektin alkaessa ollut internet sivua, tehden siitä täydellisen yhteistyökumppanin projektiin. Projektin aikana suunnittelu ja toteutus tapahtui yhteistyössä asiakkaan kanssa, sillä tutkimustulokset yhdistettiin asiakkaan omiin vaatimuksiin.

Sivuston toteutus tapahtui oppilaan toimesta hyödyntäen moderneja verkkosuunnittelu teknologioita, kuten HTML5 ja CSS3. Toteutus tapahtui käyttämällä Adobe CC ohjelmistoja – Muse CC, Photoshop CC ja Illustrator CC. Toteutukseen vaadittiin tietämystä verkkosivujen suunnittelusta, internet teknologioista, sekä graafisen suunnittelun taitoja. Riittävä teoriapohja ja tutkimus mahdollisti verkkosivuston kehityksen, joka kuvastaa moderneja trendejä.

Verkkosivusuunnittelu, trendit, HTML5, CSS3, käyttöliittymä

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1 Introduction

The objective of this research is to find the best practices for creating a website for an IT consulting company that follows modern trends. The company is a recently founded start-up company, which provides its customers with services such as website creation and graphics. When starting the project, the company did not have a website and was in need of a well-structured, visually impressive, trendy site. For the business to be able to obtain customers and attain a steady stand in the market, it will need a modern website that enables the customers to build trust in the company.

In order to create a modern website that follows trends and utilizes modern technologies; it is necessary to conduct appropriate research. To recognize modern trends, benchmarking was used as a research method. In order to form a clear understanding of modern trends, the research was conducted on multiple websites that are in the same industry as Collins O. Consulting. Research was performed on chosen sites and conclusions were drawn from concrete findings.

The thesis consists of a theory base, which contains theoretical information about the used research methods, web design in general, the web design process, and usability. Also information about modern web development technologies, such as HTML5 and CSS3, are covered in the theory. The content then moves on to the research and results, and from there to the planning and implementation of the actual website. The final chapters focus on the future prospective development and a conclusion of the project.

2 Requirements

The customer did not set very confining requirements for visual aspects of the web development project, as the goal was to create a site according to trends discovered during the research process. However some requirements regarding the structure, functionality, and overall image that the site conveys to the customer were defined.

The customer emphasized the importance of a modern design utilizing current technologies, as a contemporary design is hoped to appeal to customers. A definite requirement for the site was a responsive design, which through research was discovered to be a current web design trend. Being a start-up business, it is important to Collins O. Consulting that the website is professionally convincing in the eyes of potential clients. Therefore the website's overall look and feel was hoped to communicate trustworthiness and professionalism to potential customers. Other visual requirements included incorporating Collins O. Consulting's existing company logo into the design.

Structural requirements included a menu bar that contains the required links to navigate on the site. The site was instructed to have four pages, that all need to be represented in the navigation bar – about, services, work, and contact. The contact page was required to contain a contact form that enables customers to inquire about services.
The content of the pages was narrowly described, as the customer would provide the content that will be inserted to the pages. However the content was briefly explained as the following:

- The about page contains essential information about the company and a summary of its services. It is an overview of what Collins O. Consulting is and what they do.
- The services page includes a more detailed description of the company's services. The services include web design and development, and a wide range of graphic design services.
- The work page demonstrates the company's previous work as a portfolio, in order to showcase their creations to clients. It was instructed to contain a gallery style representation of their work.
- The contact page had more specific requirements about its content, as the company had a clear specification of how the contact page should be structured. The page was required to have a contact for that allows the customer to contact the company and inquire about services easily.

Functional requirements considering the usability of the site included browser support with all major browsers - Google Chrome, Firefox and Internet Explorer. The browser support was to take into consideration during the development process and finally tested on the final product. Other functional requirements included functionality on mobile devices, which was also considered during the development process and then finally tested after implementation.

3 Approach

The research method used in this thesis is a qualitative action research. Qualitative researches aim to find in depth knowledge about a matter, and therefore require fewer research subjects. In this research the subjects were narrowed down to six, as the goal was to find particular in depth knowledge. An action research is usually used to so solve immediate problems within an organization. It was chosen as a research method for this project, as the goal is to understand the researched topic and find the best practices for the matter. Also as creating a concrete end result, a modern website, it suits the purpose excellently. During the research, the goal was to map out the best practices, tools and trends required to achieve appropriate means to build a website that utilizes modern trends.

4 Research Methods

In this project the two main research methods used are benchmarking and usability testing. Benchmarking was used to identify the modern trends in web design and usability testing conducted to understand the end-products usability from the customer's perspective. Benchmarking was conducted on five of the most successful consulting companies in Finland, to understand and pin point the trends in that specific field. After developing the site according to the findings in the benchmarking study, usability testing was performed to maximize the value the project brings to Collins O. Consulting. Usability testing aims to comprehend how the created website corresponds with the anticipated functionalities. Benchmarking and Usability Testing as research methods are explained in the following chapters.

4.1 Benchmarking

Benchmarking can be any kind of activity an organization takes part in to collate performance levels with other organizations in the same field. The organization explores the methods others have used, and tries to find some practices that will improve their performance. Benchmarking is applicable to any area that the organization wants to improve on. Organizations usually benchmark successful competitors in order to find out their own strengths and weaknesses. Some may also benchmark the current leaders of the industry to become aware of the best possible performance levels. The main point of benchmarking is to find out what the organization is good at, what it is bad at, and find out how to solve current problems by comparing to others. Benchmarking includes, with the clearance of the benchmarking participants, the assimilation and shaping of ideas, practices or methods.

The process begins by the organization determining the efficiency of the participants. Then the performance gap between the participants needs to be recognized (between the best and worst). Then it is time to calculate the possible gains, for everyone taking part, for operating at the level of the best performer. Then the participants should modify their practices in order to improve the performance levels.

There are many reasons why an organization would choose to benchmark. Benchmarking creates a working environment where the aim is to improve. The organizations try to find out how viable they are compared to others and where to focus the improvement efforts. As it's impossible to improve many aspects at the same time, organizations are forced to focus on certain areas that are viable to improve. This results in the need to benchmark certain potential areas of improvement. This activity aims to pinpoint possible efficiency levels in each

area, by using the achievement levels of other organizations as the basis. Then at the level of hypothetical performance calculate the profit for each area, and the potential viability for improving each area. Then the organization can prioritize, at least partly, their actions based on viability levels.

Organizations believe that benchmarking is a way to shortcut the improvement process. They believe that by finding the best practice model currently used, and by adopting it to their own use the performance will increase at least to a degree. The profits of benchmarking are listed below.

- Assistance in finding the conceivable target efficiency levels of the organization, and limiting out the haphazard targets. By studying the achievements of others the organization can easily pinpoint the conceivable levels of performance.
- Market forces will force out anyone who can't perform on a viable level in enough key areas compared to others. By orchestrating a benchmarking study the organization will most likely get the shock needed to examine their performance and finding areas to improve upon.
- Benchmarking is used to solve a particular problem by using the information of others. By looking for organizations in the same line of work, and finding out how they solved possible issues.
- Most business excellence models, such as the Baldridge award, European Foundation of Quality Management Excellence Award, arrogate or at least suggest the usage of benchmarking.
- Benchmarking studies also aggregate like-minded organizations. It's never the sole reason for initiating a benchmarking, but by becoming a part of a group of people with the same goals is never a bad thing. And that network of people can be used to discuss future matters with.
- Results found in a benchmarking study can be used to justify proposals.
- Benchmarking can be used to pinpoint a competitor's weaknesses in key areas, and the organization can then improve in these areas, and market using that.

One-to-one benchmarking

In one-to-one benchmarking the organization will first learn the identities of the most efficient organizations in the area they want to improve on (The target participant chosen is rarely the best in the business; the only requirement is that the target is significantly better), the initiating organization compares the methods and efficiency from a wide range of organizations. But the actual one-to-one benchmarking will usually happen between two organizations. Then they will visit the organization to vouchsafe the efficiency, and methods used. Then they will learn about the methods used, and shape them for their own usage if need be, and finally assimilate them to the organization own use.

One-to-one benchmarking can be very efficient if the target is chosen well, and the visit is well organized. One-to-one benchmarking is a very compact process. Whence the target is found, only the terms of the occasion need to be agreed upon, and the visit scheduled. Usually only a single day is needed for the visit. The visit is conducted by a small group of people from the initiating organization. If required there may be an external consultant accompanying the group. The consultant provides an independent report of the visit, and ensures an efficient visit. The consultant may also prepare the initiator for the visit, and after the visit. There may also be some specialists in the key areas chosen for the benchmarking.

In the first step of one-to-one benchmarking the organization needs to identify the purpose of the study. This usually includes a tedious analysis of different practices to discover the one that leads to superior performance in the benchmarked area. This will be achieved by gathering demonstrative data of the potential targets. As the likely objective of the study is to bring the initiator to the same viable level as the target, this phase is important.

The second step is to find and rank the targets. This may be quite difficult for the best targets may not be obvious. The news, trade magazines, books or personal experience are good sources for potential targets. There are many criteria by which the initiator may rank the potential targets by, but the most common ones are: performance level, the similarity of the benchmarking subject, commercial considerations, and location.

In the third phase it is time to figure out what information is demanded of the target. This includes knowing precisely what needs to be learned, and what information is required from the target. The organizations own weaknesses and processes need to crystal clear.

The initiator then is in contact with the target organization, and they agree on the terms of the study. Contact the target to find out whether they're cooperative or not. They usually want to know what information the initiator is after. The initiator visits the target organization, and then analyses the obtained information (conclusion and possible future actions).

4.2 Usability Testing

Usability testing is referred to as a process in which testing participants who represent the target audience of a website evaluate how well the product corresponds with set usability criteria. It is a means of research that has a wide range of implementation methods from large-scale tests to qualitative studies of one participant. All the approaches have their own objectives and resources required. (Rubin & Chisnell 2008, 21.)

Usability testing is often a part of an effort to increase profitability of products, but it also benefits users as the results represent the user's experiences of the product. By doing this, it is possible to minimize user frustration, expose design problems, and increase profitability. (Rubin & Chisnell 2008, 21.)

The main goal of conducting usability tests is to gather data that exposes usability deficiencies in products and its supporting material before they are released. The target is to make sure that the product is:

- Useful and valuable to the target users
- Easy to learn
- Allow users to perform efficiently and effectively
- Satisfying to use (Rubin & Chisnell 2008, 22.)

Minimizing user frustration helps profitability, as it eases the customer's ability to use the product. When minimizing frustration among users before product release, it help also to accomplish other goals on the side. A user-friendly product reflects that the company is user oriented and holds importance in their clients. It therefore will strengthen the relationship between the organization and its clients. It also indicates that the company's other products and services are also high quality and easy to use. (Rubin & Chisnell 2008, 22.)

Looking at the profitability aspect, usability testing benefits an organization by creating records, of usability benchmarks for the future, minimizing service calls, increasing profitability, acquiring a competitive edge, and minimizing risks. (Rubin & Chisnell 2008, 22.)

5 Web design

Web design is the process of creating a website to be viewed on internet capable devices such as computers, mobile phones and tablets. It consists of back-end and front-end components, which as a whole create the looks and functionality of the site. Front-end development is the process of creating the client side view of the website, while back-end creations focus more on the functional side of the site. Front-end development contains the visual aspects of the site such as layout, fonts, colors, imagery and navigation. As a whole it is in charge of the sites user interface. Back-end development focuses on the functionality of the site that is not visible to the regular user. Parts of the site such as database and execution of logic statements are usually back-end operations that are not visible to the end-user. (Kraynack & Bluttman 2011, 1.)

When designing a website, there are many aspects to consider. The process of creating a site contains various steps from conceptualization to launch. To create a visually intriguing and

functional site, it is important to plan and follow appropriate principles and processes. (Kraynack & Bluttman 2011, 1.) The principles and processes are covered in more detail in the coming chapters.

5.1 History of web design

The internet is a relatively new concept, as its beginning originates to the late 1960's. The use of internet was originally created and restricted to the United States military, as it functioned as a tool for data exchange for the government. At that time GML (General Markup Language) functioned as the markup language for the internet, which being the first of its kind, was inconvenient and hard to use. In the 1980's GML begun to evolve, as scientists started creating it's follower SGML. Shortly after the release of SGML, scientist Tim Berner Lee invented the HyperText Markup Language (HTML). (Astra Design 2014.)

Between 1989 and 1990 Berners-Lee proposed a set of protocols and a software called World Wide Web, which enabled computers to browse content on the internet. Along side the software and protocols, he created the first web server called HyperText Transfer Protocol daemon. The new technology allowed Berners-Lee to publish a website in August 1991, which was the first website in the history of internet. At the time there was only a single web server, but within the next year, over 50 new web servers started operating around the world. (Astra Design 2014.)

Web designing started off with minimalistic designs, due to the restrictions of HTML. As HTML progressed, it allowed users to create more complex content to their sites. In the early days of HTML sites were mainly text based but as it evolved, it allowed users to, for example add images and tables to their designs. Along the invention of CSS (Cascading Style Sheets) and server-side scripting, web design evolved exponentially. In the mid 1990's server-side scripting technologies (PHP, ASP.Net) and CSS improved substantially, enabling a wider range of options in the design of sites. Macromedia Flash was also released around the same time, which allowed the user to integrate animated content to a site. Since then web technologies have continuously evolved and improved, allowing designers to create more demanding sites that are not only visually impressive but also user friendly. (Astra Design 2014.)

5.2 Development of web design trends

As the demand for high functionality from sites, usability has taken an important stand in the world of today's web development. The importance of engaging visuals has grown, as the web design technologies have drastically improved. (Gulbekian 2014.)

In the beginning of the web, 1995 to the early 2000's, sites were very minimalistic containing a white background and plain text. The sites were built with the first generation of HTML and therefore were not capable of significant graphical elements. The first sites did not emphasize on usability, instead the focus at the time was on creating menu bars and links that assisted the user to navigate on the site. As the internet was new at the time, users required guidance to be able to navigate on a website successfully. (Gulbekian 2014.)

Image 1: Examples of earliest web designs

The next era of web design was from 2002 to 2010, when the importance of user guidance was continuously growing. In order to educate the users on navigating through content, designs included large graphics that guided the user and enabled them to familiarize with the internet. These large graphics would contain commands such as "click here" or "learn more", to ensure that the user finds their way around the site with ease. In this era, the minimalistic design had been overtaken with colorful graphics, drop shadows, and oversized buttons. (Gulbekian 2014.)

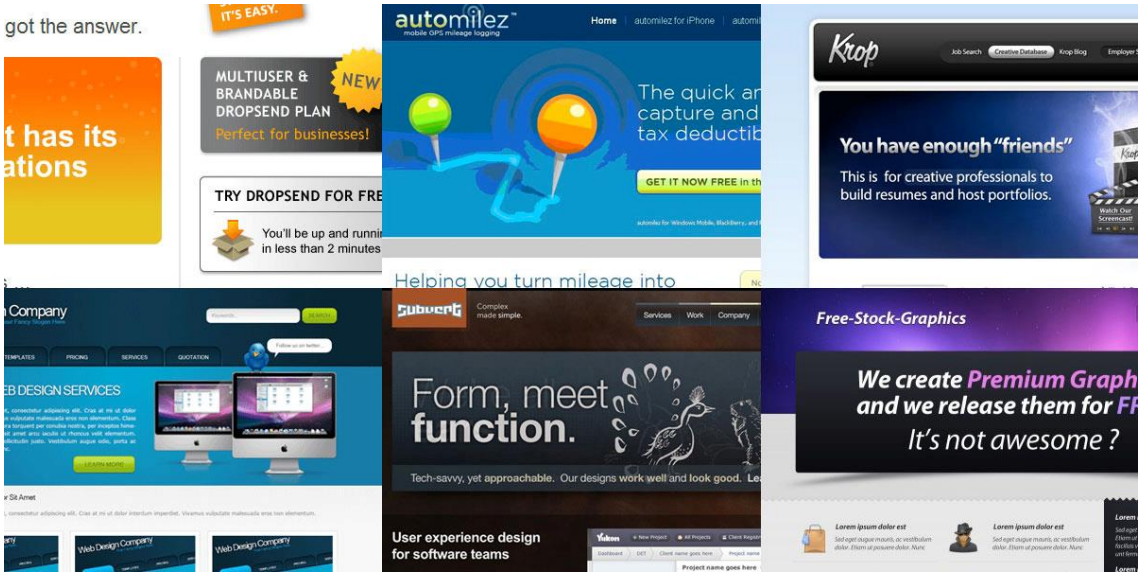

Image 2: Examples of designs from 2002 to 2010

The third era of web design was from 2010 to 2012, when the design trend shifted to skeuomorphism. Skeuomorphism is a style of design that incorporates visual characteristics of objects into digital design. This style of design emphasizes on the feeling of familiarity by using functional aspects and qualities of objects to create designs. The style uses texture, light effects and colours that create a realistic design. Skeuomorphism became very popular in this era, as companies such as Apple used in their interface designs. (Gulbekian 2014.)

Image 3: Examples of skeuomorphism

The most recent design style is a flat style of designing. This style is shifting towards a more minimalistic style, removing all the unnecessary elements that do not have any significant purpose on the site. The flat style of designing emphasizes on simplicity and usability, elimi-

nating decorative elements. This allows the user to focus on the content without experiencing distraction from flashy graphics. Bright colours, sharp edges and 2D elements are an important part of the visual appearance of the modern sites. One of the first companies to apply this design to their interfaces was Microsoft. Microsoft used this style in their Windows 8 interface. (Gulbekian 2014.)

As mentioned, the skeuomorphic style emphasizes on usability and adaptability. A simplistic design allows faster load times, as the site is lighter and requires less complicated coding. This also means sites are easily adapted to multiple platforms, resulting in ability to effortlessly view sites on desktops and mobile devices. (Gulbekian 2014.)

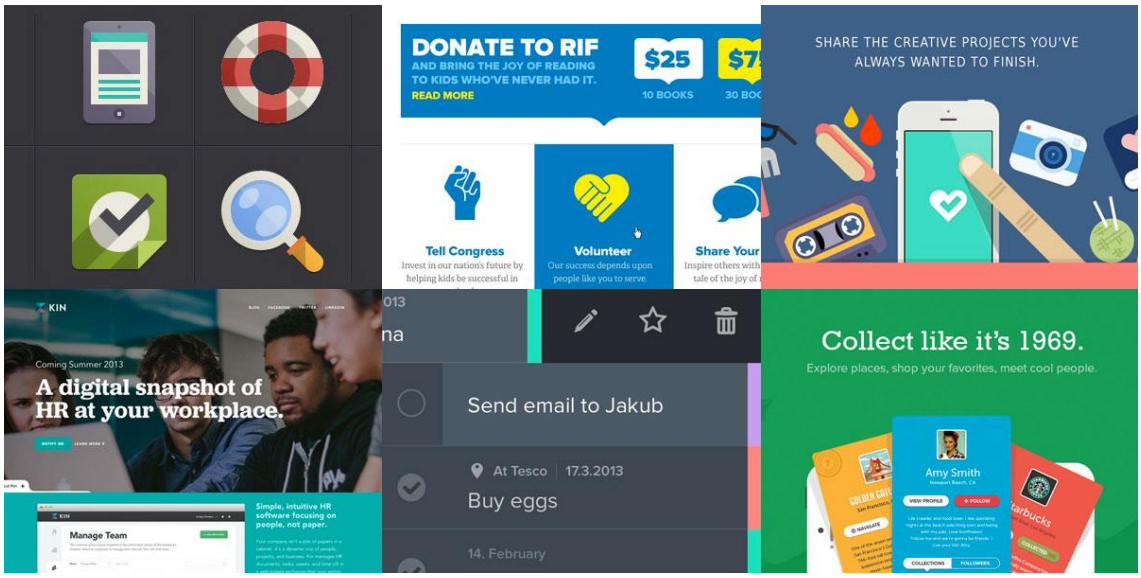

Image 4: Examples of flat designs.

5.3 Tools

The modern tools for web design are rapidly evolving, providing a wide range of tools to utilize for development. When starting the development process of a website the tools are chosen according to a specific project, as they provide a varying scale of features. Therefore the importance of choosing the right development tools is crucial, in order to make the development process as simple as is can be. The tools used in this project are explained in more detail in the following chapters.

5.3.1 HTML5

HTML5 has new updated features compared to HTML4. The new features enable an easier approach for multiple functionalities that in the past have required the use of plugins. Video and audio elements can now be embedded using their own tags. HTML5 also enables the usage of new form elements such as calendar, date, time, email, and search. Another key feature added to it is 2D/3D transformations, which broadens its reach to game development. (W3Schools 2014.)

Multimedia embedding

When it comes to multimedia on sites, Flash has been an important tool in playing multimedia content, as there has not been a standard way of playing them. With the new features of HTML5, it is possible to play multimedia without using plug-ins, such as Flash. HTML5 has standardized the way of embedding audio and video files by creating specific tags for them. Audio elements are defined as *<audio>* and video elements as *<video>*. (W3Schools 2014.) The following demonstrates how an audio file is embedded on a site:

```
<audio controls>
 <source src="sound.ogg" type="audio/ogg">
 <source src="sound.mp3" type="audio/mpeg">
Your browser does not support the audio element.
</audio>
```

A video file is embedded the same way, but on top of specifying the source, it allows specification of the display size:

```
<video width="420" height="340" controls>
 <source src="video.mp4" type="video/mp4">
 <source src="video.ogg" type="video/ogg">
Your browser does not support HTML5 video.
</video>
```

Geolocation

The geolocation feature allows an application to pinpoint a users geographical position. Usually the user is requested to permit an applications access to their location using GPS. When agreeing to the request, the application pinpoints the users location on Google Maps. The following demonstrates an example of geolocation usage.

```
 <!DOCTYPE html>
<html>
<body>
```

```
<p id="test">Click to view your location:</p> <button onclick="getLocation()">Click</button>
<div id="mapholder"></div>
<script>
var x=document.getElementById("test"); function getLocation()
 {
 if (navigator.geolocation)
{ navigator.geolocation.getCurrentPosition(showPosition,showError); }
else{x.innerHTML="Geolocation is not supported by this browser.";} }
function showPosition(position)
 {
var latlon=position.coords.latitude+","+position.coords.longitude;
var img_url="http://maps.googleapis.com/maps/api/staticmap?center="
+latlon+"&zoom=14&size=700x500&sensor=false"; docu-
ment.getElementById("mapholder").innerHTML="<img
    src="'+img_url+'">";
 }
function showError(error)
{
 switch(error.code)
   {
   case error.PERMISSION_DENIED:
x.innerHTML="User denied the request for Geolocation."
     break;
   case error.POSITION_UNAVAILABLE:
x.innerHTML="Location information is unavailable."
     break;
   case error.TIMEOUT:
x.innerHTML="The request to get user location timed out."
     break;
   case error.UNKNOWN_ERROR:
x.innerHTML="An unknown error occurred."
break; }
 }
</script>
</body>
</html>
```

5.3.2 CSS3

CSS3 (Cascading Style Sheet) is the most recent version of website styling languages. It was released in 1997, for the purpose of modifying the look of websites. It works in close contact with HTML, as HTML provides the content and CSS styles it. (Kyrnin 2014.) The updated version of CSS allows the possibility of a more visually appealing result, as it provides more possibilities in styling. It also allows designing responsivity, which is a crucial element of today's web design. (W3Schools 2014.)

As CSS3 provides more options in styling, the updated version comes with attributes such as better background control and more text styling possibilities. The increased background control is exhibited for example in the possibility of using multiple images as a background, creating collages of elements that function as a background. CSS3 also brings options to text styling, which means text can be styled more widely using the style sheet. (W3Schools 2014.)

CSS3 also provides the possibility of 2D and 3D transformations, which can be executed as translate, rotate, scale, skew, and matrix. The 3D transformations are controlled by using an X- and Y-axis, which define the rotation of the element. (W3Schools 2014.)

5.3.3 Adobe Creative Cloud

Adobe Creative Cloud is a package of design and development applications that provides all the necessary tools for web development. The package consists of 26 applications, that all provide different services for the user from web design, to image manipulation and video editing. Adobe has a multitude of applications directed to web design and development, which makes it the leading software distributor of creative applications. The applications essential programs for web development are Dreamweaver, Muse, Edge Animate, and Edge Reflow that all provide different attributes and functions to web development. Other essential applications used for design are their image manipulation and vector graphic applications Photoshop and Illustrator. Photoshop allows the user to manipulate images, whereas Illustrator is mainly used for creating vector graphics. (Adobe 2014.) The Adobe CC applications used in this project are Muse, Dreamweaver, Photoshop, and Edge Reflow.

Adobe Muse

Adobe Muse allows users to create HTML websites for desktop and mobile devices without writing code. It possible to plan and design sites using familiar features, add interactivity and publish by using simple modifiable basic elements. A website is initiated by planning the pages and developing the site structure and content organization on a site map.

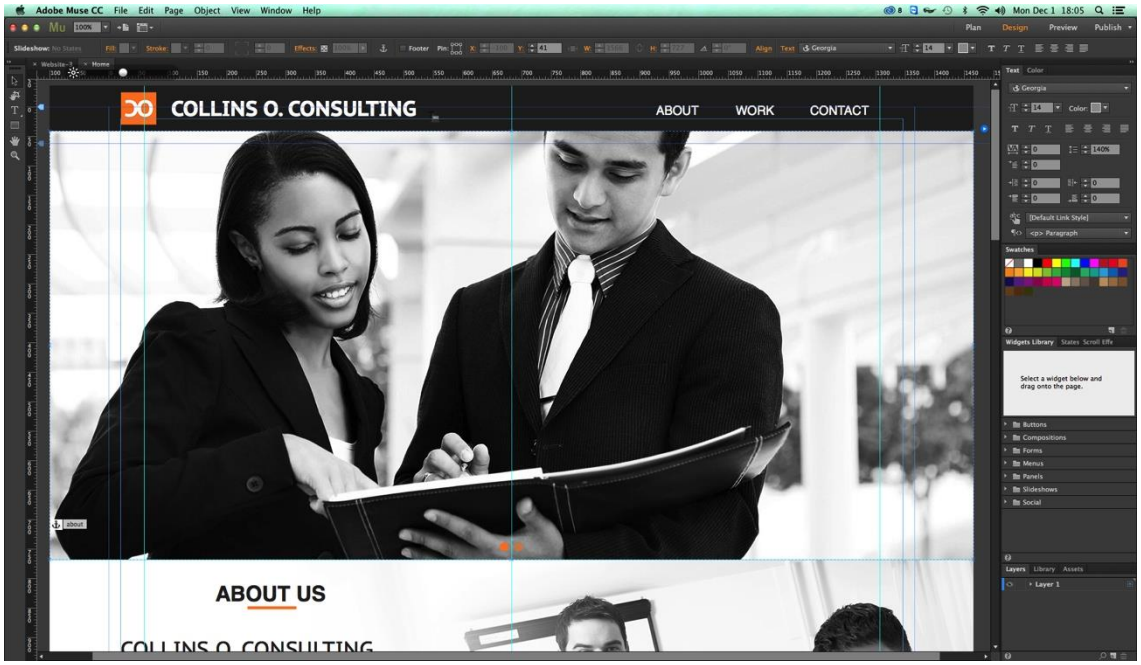

Image 5: Adobe Muse CC interface

Muse allows the user to add all the basic elements of the site through its provided options. It has a multitude of options in form of web safe fonts and widget library, and other tools. The application has hundreds of pre-installed web safe fonts that the user can select as the typography of the designed site. The widget library on the other hand provides all the interactive elements that can be added to the design, such as forms, slideshows, maps etc. The elements added from the widget library can be customized to match the over-all design of the site, by changing colors and other attributes.

6 Web design process

A web design project can be viewed as a process of tasks. The process of designing and creating a website is a phased but iterative and complex process that includes parallel tasks that are connected to each other. It is divided into three parts; user interface design, implementation, and testing, deployment and follow-up. All of the mentioned phases have multiple sub phases. The following picture illustrates the web design process and its phases. (Sinkkonen 2009, 37.)

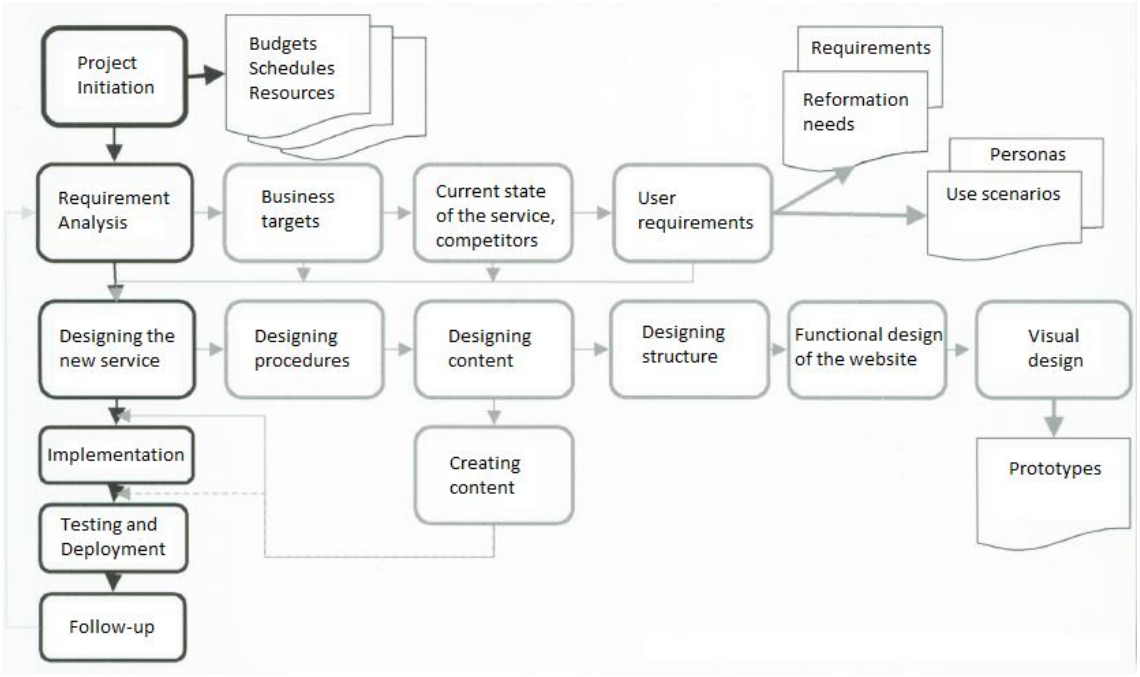

Image 6: Web design process

6.1 User interface design

The first phase of creating a website is designing the user interface. It consists of four sub phases; requirement analysis, functional design, visual design and creating content.

6.1.1 Requirement analysis

A requirement analysis clarifies the requirements of the desired end-product. Its task is to develop a clear understanding of what is required in order to create a system that fulfills the customer's needs in all aspects. Important aspects to consider in a requirement analysis are:

- Functional requirements
- Information requirements
- Environmental requirements – Physical environment, social environment, and the conditions and devices the system needs to perform on. It is important to remember the increased use of mobile devices, as majority of people access websites using smaller resolution devices.
- User requirements – User characteristics, knowledge, and experience.
- Usability requirements – What kind of features the service requires to fulfill the users needs? The requirements are associated with the service's efficiency, ease of use, and safety.

- Accessibilty requirements
- Safety requirements
- Project requirements – schedule, costs, and risks. (Sinkkonen 2009, 49.)

The next stage is to understand the potential users, this is achieved through conducting a user analysis. A user analysis is the base of user oriented product development. In order to create a successful product, it is important to be aware of the user's goals, tasks, restrictions, motives, and environments. (Sinkkonen 2009, 66-67.)

A user analysis can range from a small to large-scale analysis, depending on the project at hand. There are also various methods of gathering information about potential users, such as interviews or observational studies. The method used in collecting information can be chosen according to project specific goals. A user analysis is usually conducted using one or more of the following methods:

- Interviews – to understand the user's opinions, perceptions, and attitudes.
- Surveys – to understand opinions, and to learn more about the user.
- Observation and testing – observing and analyzing behavior.
- Stories and journals – the examinee records their experiences.
- Role-play and simulations – simulate and vary usage. (Sinkkonen 2009, 70.)

The process of analyzing users starts from categorizing potential users. Users are categorized in to user groups. A user group is a group of users that have the same goals, needs, knowledge and procedures, and therefore require similar attributes from a product. Target groups are usually defined at the stage of strategic planning, the user groups should also be defined at the same time. A market research is a useful tool for defining suitable user groups. When creating user groups, it is important to pay attention to the attributes that separate users from each other. Differences to pay attention to are roles, age, experience, and environment. (Sinkkonen 2009, 66-67.)

A user profile is a detailed description of a user group. It defines the typical attributes of the user group in question. The similarities and differences between groups are essential in user profiles. (Sinkkonen 2009, 66-67.)

Age	25-40 years
Gender	70/30% female/male
Title	Training planner, training assistent
Working hours	40h/week
Tasks	Updating common pages, uses mostly intranet-pages
Education	Bachelor of Business
Equipment	PC, 19" screen
Technical Experience	2-8 years
Restrictions	50% uses glasses
Other	Any necessary information that describes critical tasks, expectations, needs etc.

Table 1: Example of a user profile

The interface can be personalized to suit all users individually, but it is more common to design the interface so that it supports every group's agenda. Due to practicality reasons, the interface is usually initially designed for a primary user group and after fulfilling their requirements, secondary user group's requirements are added to diversify usability. (Sinkkonen 2009, 66-67.)

The third phase of the requirement analysis is to analyze and summarize the results of the user research to conclude on the findings of the conducted research. The results help to understand the key users and important aspects to consider while developing the site in a user oriented manner. In this phase personas and problem scenarios are created in order the further characterize the potential users. (Sinkkonen 2009, 38.)

The last phase in the requirement analysis is to define the usability requirements. The purpose is to establish requirements for later testing during the development process. The usability requirements provide firm usability objectives that can be tested later on in the project. Defining the usability requirements in the planning stage emphasizes the importance of usability early on in the development process. There are two aspects to consider; quality in use requirements and detailed usability requirements. Quality in use requirements establish the effectiveness, efficiency and satisfaction for the user groups identified in the earlier stages. The detailed usability requirements consist if usability requirements that are relevant to the project. Requirements can include attributes such as understandability, learnability, operability or attractiveness. (Cost-effective User Centered Design 2014.)

6.1.2 Functional design

Functional design is used to map the potential users actions on the designed site, and therefore design it to function according to the users needs. Utilizing this information, the structure of the site can be determined and a wireframe model can be built.

Creating new processes

There are multiple ways to design the functionality of a new website. One approach is to modify the scenarios into use scenarios, in other words to descriptions of the behavior of the personas web service usage. Use scenarios are utilized when designing the information architecture and individual processes of the service. (Sinkkonen 2009, 171-172.)

Storyboards can be utilized alongside use scenarios when designing new ways of usage. Use scenarios are less time consuming to produce and therefore are better suited for fast-paced development than storyboards. Also designers often feel that it is easier to describe the user's actions verbally than through pictures. Storyboards bring more benefit when designing devices, rather than web services. (Sinkkonen 2009, 171-172.)

Use scenarios are built based on scenarios and other material gathered during the requirement analysis. It is important to include the business requirements when creating use scenarios. When re-modeling an old service, it is important to draw attention to the defects of the scenarios. (Sinkkonen 2009, 171-172.)

If scenarios have not been created, use scenarios must be produced using the material gathered during the user analysis phase. If the user analysis has not been conducted, use scenarios can be created without reference. In this situation it is important to at least create personas and base the use scenarios on the personas. (Sinkkonen 2009, 171-172.)

Use scenarios are created in the same manner as scenarios; each use scenario is created to represent one persona. In order to depict course of action of a persona, multiple use scenarios are created for a single persona. (Sinkkonen 2009, 171-172.)

Designing the structure of the web service

Planning the system starts from the structure and navigation, in other words the information architecture of the application. Before creating individual pages, it is important to plan the over-all structure of the website. (Sinkkonen 2009, 183.)

When designing the structure it is important to acknowledge the differences of design between a website and a web application. In both cases, the product must follow the requirements of the users and complement their processes. However, the site should initially facilitate finding information. A web application should support processes, meaning it should sup-

port the manner in which the user conducts their tasks. In a web application, the user is not searching for information; instead the goal is to perform tasks using the system. The information architecture of the system should complement the process of performing these tasks. (Sinkkonen 2009, 183-184.)

Mental models are applied to both websites and web applications. Websites utilize structural models, whereas web applications utilize process models. A structural model depicts the user's expectations of what the product contains, when a process model illustrates the users expectations of how a certain task proceeds when using the application. The architecture of the service should reflect realistic requirements of the user as far as the interface design of the final product, in order to alleviate the users understanding of the service. (Sinkkonen 2009, 183.)

Wireframing

When the websites structure has been created, the next step is to design a wireframe model of the site. A wireframe model is a page-by-page representation of the sites functionality and content. At this point the content, headings, and navigation have been decided. The purpose of wireframing is to illustrate the structure, information hierarchy, and functionality through an image. At this stage menus, content, buttons, and forms are set into place and pictures, icons, and animations are placed into the design. In other words, the sites whole interface is illustrated through a sketch. (Sinkkonen 2009, 203.)

A wireframe portrays the functionality of the site, it includes explanations to why certain attributes have been placed to a particular area, and what their functions are. It also illustrates how dynamic objects refresh on the site. (Sinkkonen 2009, 203.)

Wireframes are created in an iterative manner through prototypes. Prototypes develop pahse by phase towards a wanted solution. The models function as documents that provide a base for more elaborate planning and provide information about design decisions. (Sinkkonen 2009, 203.)

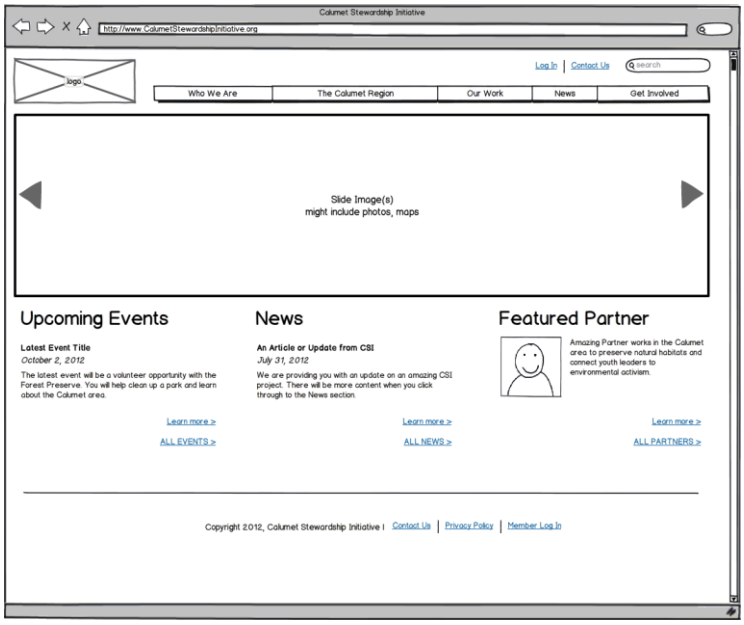

Image 7: Example of a wireframe model

6.1.3 Visual design

The visual appearance of a site coveys two messages to the user. The first and most important is the presentation of the content. The appearance of the site should facilitate the user's ability to find information and perform tasks. The appearance should help the user to notice, parse, and understand things that are important to notice – this is called visual usability. The second task is to convey a certain message through the overall appearance of the site. This means that the site should portray specific brand identity; an overall look and feel, and personality. (Sinkkonen 2009, 242.)

Visual design creates a general appearance for the web service, which carries out the company's brand image on a visual level but also on a deeper level. The deeper level of the brand image transmits desired attributes of the company to the user, such as trustworthiness, professionalism, modern etc. The general appearance should depict the specific service the company provides, and should also align with other possible services the company provides. (Sinkkonen 2009, 242.)

Visual design is conducted alongside the rest of the project. The final visual design can be created when the information architecture has been designed fully. Usually the interfaces visual elements are designed after a wireframe has been created, though designers often wish for preliminary information on elements, as they are often created in a relatively short timeframe. The final site is assembled as soon as all the required visual elements have been created. (Sinkkonen 2009, 242-243.)

There are a few important points to take into consideration when designing a websites visual appearance. The points are explained below.

Visual hierarchy

The elements and content on the site have hierarchical relationships with each other. Things are grouped and affiliated with each other, which should be portrayed through placing, indentations and text design. (Sinkkonen 2009, 251.)

Grouping

People perceive hierarchical groups better than separate, unconnected items. A user can make decisions based on a large amount of information, as long as it is clearly presented and grouped. Elements that are placed far away from each other are harder to comprehend and therefore slows the user's ability to understand provided information. Grouping eases and speeds up the process of perceiving and understanding information. Therefore clear layout of information has a great impact on receiving and processing information. (Sinkkonen 2009, 251.)

Blank space

Blank space around objects accentuates the importance of an element. It enables the user to quickly notice an object. If elements are squeezed in a small space, their importance is reduced. Especially placing elements in tight spaces on the edges of a site signals that the information is inessential. (Sinkkonen 2009, 252.)

Colors

Colors are an essential attribute of a layout, as they control the overall image of the site. Colors should be chosen so, that they portray the message and feeling of the web service. Symbolic messages and feelings that colors raise are important to keep in mind when choosing the color palette for a website. It is not advised to use very rich and warm colors as background colors, instead lighter shades are more suited for most sites. The way people react to colors is controlled by culture, fashion, trends, and seasons.

A concise color palette is a definite way to create an elegant and functional website. Strong colors and contrasts should be avoided, in order to ensure the users comfort. Bright colors and strong contrasts often exhausts the eye, and therefore causes the user to spend shorter times on the site. (Sinkkonen 2009, 252.)

Image 8: Color palette

Typography

Typography means the fonts and font sizes used on a site, and the layout of text. The goal is to make the site easy to glance through and read. Typography also has an effect on the appearance of a website. Text can also be used as visual elements. Headings, normal text, menus and links should have their own font specifications, which are controlled through a CSS style-sheet. (Sinkkonen 2009, 254.)

Images

Pictures demonstrate things and work as attraction points, and are a part of the over-all look and feel of a website. They help the user to attract their attention to certain areas of the site, and therefore can be used as pointer for attracting attention to desired areas. A wrong choice of an image can negatively affect the sites atmosphere and over-all appearance. Communicating personality and individuality can be easily conducted through the right kind of image choices. (Sinkkonen 2009, 254.)

6.1.4 Creating content

The substance of a website is the actual content that is provided to the user. This content can be text, images, videos, animations, or sounds. Almost all the other elements on the site are in place, so that the user can find content easily. User experience is based on the ability to and the desired content and how the content corresponds to the users needs. (Sinkkonen 2009, 256.)

Creating content is a process that proceeds along side the other aspects of the websites creation process. The content is shaped during the process and added at the last phase of the design process. It is tightly affiliated with other processes in a web development project. (Sinkkonen 2009, 256.)

Along the design project, there are phases where design and content creation are highly dependent on each other. The content applied to a site determines the structure of the layout, as the content must fit the site in a desired way. Creating content should start in an early phase of the project, as content is the most important part of the end-product and therefore should be ready for use at launch. (Sinkkonen 2009, 256.)

6.2 Implementation/ Development

The implementation stage is when the website is actually created. The implementation is based on the the plans created at the user interface design stage, in other words the planning stage. At this point all the individual graphic elements from possible prototypes are combined and used to build the actual functional site. (Bowlby 2008.)

The first step is to determine the appropriate tools to use for development. It is important to consider the requirements of the end product and choose the best tools for development. At this point all the necessary environments are set up, such as getting a CMS up and running. By setting up the necessary environments in an early stage, it is confirmed that the server can withstand the set-up, avoiding problems later on in the development. (Reimer 2011.)

The actual implementation page generally starts from developing the index page, which is followed by creating the remainder of the pages. This can be done by creating a master page, which is then used as a base for the rest of the pages. The base is used as a template for the other pages, as it contains all the necessary elements of the website. After building the master page, the required content can then be distributed throughout the site to their predetermined locations. During this stage all functional elements, such as interactive content like forms, are made functional. (Bowlby 2008.)

An important element of the implementation is ensuring the quality of written code. The code should be kept well organized and commented to ensure easy understandability and detection of errors. To avoid voluminous problems at the end of the implementation process, testing should be done throughout the development process, to ensure the functionality of created elements. (Reimer 2011.)

6.3 Testing and deployment

After building the website, the next step in the process is to conduct testing. The testing should be deployed on the entire site, to ensure complete functionality. The attributes tested are especially the interactive elements, such as forms and other scripts, along side usability factors. Important usability factors considered are browser compatibility and responsiveness. (Bowlby 2008.) Usability testing is explained in more detail in Chapter 6.2.

While testing the functionality of the developed site, it is good to also pay attention to the written code. The code should be valid, meaning that it should reflect the current web development standards, as it eases the process of checking for issues if they occur. (Bowlby 2008.)

After testing that the website functions as hoped, it can be deployed. Deployment means that the product is made available to use for the client. It usually happens so that the site is uploaded to a server using a FTP program. Depending on the case, the server is either already provided by the client, or the developer offers domain name registration and web hosting for the customer. When uploading the files to the server it is important to make sure, they are correctly transferred, as it will affect the functionality of the website. Therefore additional testing can be done, to ensure the full functionality of the site after transferring it on the server. (Bowlby 2008.)

7 Usability

Usability is a key attribute to consider when developing a website in this encreasingly internet based era. People use the web for researching information and therefore an easily usable site is a key factor in order to help the user find desired information. As usability becomes an increasingly valuable factor in both web and software design, developers should put usability as one of the most important requirement, as an easier to use application experiences more returning customers based on its functional simplicity. Emphasizing on usability is a cornerstone when aiming to ensure stellar user experience. (Rex & Pardha 2012, 12.)

The ISO 9241 standard defines usability as: ”The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use". This definition has a few of the attributes that are generally perceived as the characteristics of usability, but when broadening the definition, usability is often thought to be based on five characteristics; effectiveness, efficiency, engaging, error tolerant, and easy to learn. (Quesenbery 2001.)

Effectiveness is the degree of which users successfully achieve specified goals. This can be measured by the user's success rate in achieving set goals and the level of accuracy in work. Often effectiveness and efficiency are hard to separate, but they have a clear difference. Efficiency equals to time in which a task has been performed, when effectiveness considers how proficiently the task has been completed. Commonly efficiency is set as a topmost principle, but not all tasks require efficiency as their first requirement. For example in some cases effective use of the system is more desired attribute than marginal gains in speed due to efficiency. Effectiveness often relies on carefully planned presentation of choices, so that they are easily understandable to the user. The informativeness of the interface defines the ease of which users are able to perform task without problems. (Quesenbery 2001.)

Efficiency is described as the speed in which user's complete assigned tasks using a product, also seen as the total resources expended in a task. Efficiency can be measured by the amount of clicks or total time spent on a task. Defining tasks from the user's perspective is important, as they often are not single interactions, but a more complex process. Aspects that aid efficiency are for example navigation elements (keyboard shortcuts, menus, links), which affect efficiency if well designed. The less time and effort the user spends on finding wanted content increases efficiency. In order to make right choices regarding these factors, it is important to be aware of the user's way of working. (Quesenbery 2001.)

An engaging interface is enjoyable and fulfilling to use. When looking at a site from its ability to engage the user, visual design is the key element to consider. All aspects of the visual presentation of a site are the attributes that contribute to the user's immediate reaction and therefore to the first impression of a website. All images, graphics, multimedia element and over-all style contribute to how engaging a site is to the user. On top of these, readability and ease of navigation are an important part of an engaging design, as the highly contribute to the usability of a site. Like the previous usability characteristics, it is crucial to match these qualities to the tasks that the user will be performing. (Quesenbery 2001.)

An error tolerant application is designed to minimize the errors resulted due to the user's interaction, and to aid recovery from errors that might arise. The ideal situation is to build a system that does not have errors, but as known it is not possible to create an errorless system. Therefore the goal is to maximize the tolerance for errors. Errors occur due to many reasons, most commonly because of the designer's inability to predict all the possible ways the user might interact with the system. To make the situations where errors occur simple to the user, appropriate error messages are a good way to help the user understand what went wrong and how to correct the problem. Some pointers for preventing errors are:

- Decrease the possibility of taking incorrect actions. Links and buttons should be designed to be individual to avoid confusion, use of clear language, and unity between dependent attributes are important.
- Decrease possibility of invalid actions. Limit choices, provide simple examples and only present options that are necessary.
- Decrease possibility of irreversible actions. Provide the option to go back, undo and reverse actions.
- Plan for unanticipated occurrences. (Quesenbery 2001.)

An easily learnable interface helps the user to gain knowledge without a planned effort. It is important for users to be able to build on their previous knowledge and also on previously learned interaction patterns. Users learn through predictability and therefore predictability is a key attribute for interface consistency. Consistency is manifested through consistent terminology, familiar placing of elements and controls, and essentially consistency between different functions. Generally it can be considered as placing information in places where the user expects it to be. When incorporating predictability in to a design, careful user analysis is required in order to understand the user's behavior. (Quesenbery 2001.)

When designing usability, it is important to understand the importance of the multitude of devices used to browse a website. As smartphones and tablets have become increasingly popular in internet browsing, it is vital to keep in mind that usability must resonate through all devices used to browse. Currently the main devices used are desktops, smartphones and tablets. The following points describe the important elements to consider while designing for these devices. (Knight 2013.)

Desktop

The key attributes to keep in mind when designing for desktops are the ability to use a mouse and keyboard, and a larger screen space. These factors are the main elements for desktops, and should be taken in to consideration by using the following in designs:

- Grid-like layouts for easier content browsing
- Sub-menus, dropdowns and horizontal navigation for easier navigation
- Using multiple pages for a more active and dynamic experience
- Assistance in navigating through the site – navigation breadcrumbs etc.

Essentially the desktop site should utilize its capabilities and strive to awaken the user's interest. The target is to make the user curious to visit the desktop site after viewing it with another device, as the desktop site provides the user with more options and possibilities to interact with the site. When utilizing the larger screen space desktops provide, it is crucial to keep in mind that there are still devices that perform as desktops, but have a smaller resolu-

tion. Therefore resolutions should be an important point to remember when designing a interface. (Knight 2013.)

Tablets

Tablets have increased in popularity in the recent years and therefore are a popular device for internet browsing. Tablet designs are equally important as desktop and smartphone designs, as they are widely used nowadays. However tablet designs have often been viewed as a secondary design alongside desktop designs. In tablet designs the most important factor is that they are touchscreen and therefore should be approached differently. Application like designs are very used in touchscreen designs – inspiration can be gathered from native application designs. The following are good to take into consideration when designing for a tablet:

- Large touching areas especially for the navigation.
- Even though desktop designs can be viewed on a tablet, it is not advised, as it will reduce the usability.
- Use of buttons for links and simple actions, and usage of back and forward buttons.
- Retina optimization, as iPads are a majority of tablets used for browsing. (Knight 2013.)

Smartphones

The most important factor when designing for smartphones is the limited space it provides. Usability should not be compromised because of lack of space. It is key to understand why a user is viewing the site on a certain device, for example a smartphone user often wants content and actions that can be performed quickly while a desktop user is more interested in interactivity. The following points are important when designing for smartphones:

- Simple interaction, so that the user can concentrate on key actions
- Easily filterable content
- Simple design that resonates brand image
- Using larger fonts to avoid zooming
- Popups and notifications are not advised
- Smaller number of pages to avoid lengthy page loads (Knight 2013.)

8 Benchmarking Results

The Benchmarking research was conducted on six different company websites that operate in the same industry as Collins O. Consulting. The companies were chosen based on their current financial status, as the goal was to find the trends among successful companies in a specific field.

The chosen companies consist of both Finnish and international companies, three Finnish and three foreign. The idea was to use both Finnish and international companies, to gain perspective on both styles. The companies were chosen from listings of the most successful advertising agencies from two different magazines; Forbes and Kauppalehti. Forbes listed the Top 30 Advertising Agencies based on their revenue in 2013. The international companies chosen from Forbes' listing are Grey, Droga5, and BBDO. (Forbes 2013.) Kauppalehti's listing of the most successful companies of 2013-2014 consists of reviews of all Finnish companies, from which the advertising agencies were sieved out. Again the three most successful companies were chosen: Rocky Advertising, Hasan & Partner, and Mainostoimisto SST. (Kauppalehti 2014.)

The research focused on the interface design of each site. The considered attributes were colors, over all style, interactivity, structure, and usability. The key usability attributes measured in this research were ease of navigation and browser support. After reviewing the site, similarities were compiled in order to conclude on design trends.

The websites have very similar attributes in their design and the trends were easy to point out. The main trends that arose were:

- Simplistic design with square and round shapes (over all style)
- Two coloured: consisting of white and a brighter color (color)
- Slideshow on landing page and other moving elements (interactivity)
- Incorporating Google Maps in contact page (interactivity)
- Navigation on the top of the site (structure)
- Browser support with Chrome, Firefox, and Safari (usability)
- Responsive design (usability)
- Simple navigation with only few links (usability)

9 Planning

The planning started with compiling the research and requirements, in order to have a clear understanding of the required attributes. The requirements set by Collins O. Consulting were combined with research results, to maximize the outcome of a trendy and client-satisfying product. The planning process continued with building a wireframe model of the website, that would be easy to follow at implementation stage.

Creating the wireframe begun by going through the requirements set by the company. The company required a clean professional look, which incorporates the company's existing logo. The interactivity side of the design consists of requests, such as a responsive design implemented as a single-page website. Incorporating a contact form and sufficient browser support was also requested. The requirements are explained more carefully in Chapter 2. Incorporating these with the discovered trends, the requirements sum up as illustrated in the following table.

Style	- Simplistic, clean, and professional - Includes Collins O. Consulting's original logo - Usage of round and square shapes in design
Color	- Two main colors: white and black
Structure	- Navigation on the top of the page, aligned with logo - Slideshow on landing page - Navigation links: About, Work, Contact - Single-page website
Interactivity	- Slideshow and hover effects - Incorporating Google Maps to contact page - Reponsive design
Usability	- Browser support - Easy navigation - Ease of contact – contact form on Contact page

Table 2: Research results combined with customer requirements

Wireframe

The wireframe was created based on the requirements stated in the table above, using an application called MockFlow. MockFlow is a wireframe model designing tool that allows fast and easy creation of models, using built-in components, instead of drawing the components by hand.

The created wireframe is demonstrated in Appendix 1. The wireframe model illustrates the structure and placing of elements on the site. Being a single-page design the idea is that all the "pages" are underneath each other on the landing page. The navigation links are anchored to each section allowing the navigation to scroll to the desired part of the page – work link scrolls to the work-section of the page when clicked. The navigation is locked at the top of the page, which means that it is constantly visible while scrolling through the page. The navigation consists of the required links and is placed on the top of the page.

The landing page displays as a whole screen slideshow that rotates corporate images. The slideshow's purpose is to incorporate interactivity to the design, and also convey a professional image through corporate pictures. The slideshow rotates three images, which are displayed by the three round buttons on the bottom end of the slider. When an image is displaying on the slider, the designated button is shaded.

The About-page's structure shows the description of the company on the left side, and the right side is filled with an image of employees. The image works as a background for the page, as it will fade from the right to the left. The company description contains a brief summary of their essential operations in capital letters, and continues with a regular size text that explains their operations and services in more detail.

The Work-page is structured as a gallery, showcasing the images in square thumbnails, placed in a symmetrical order. The thumbnails contain a hover effect, which displays a description of the associated piece of work when hovering over with the mouse. The thumbnails are framed with a colored frame. The page's content is very scarce, containing only the images, to support the simplistic design trend.

The Contact-page is built using three sections. The first section is divided in two, containing the contact information and contact form. The contact information is displayed on the left side of the page containing the address, phone number, email, and website address. The contact form is displayed on the right side of the page, and contains three type boxes – name, email, and message. Send button is located under the message box. The third section of the Contact-page is an embedded Google Maps API. The map pinpoints the location of the company's office on the map. The Google Maps display is customized to suit the colors of the design. Lastly a footer on the bottom of the page, displaying the copyright information.

10 Implementation

The implementation of the website started off with choosing the appropriate tools to create the site. The application that was chosen to use was Adobe Muse CC, because of its ability to create responsive design easily without writing excessive amounts of code. Adobe Muse CC is compatible with all major browsers, which enables the user to create sites that perform bug-free on all browsers. This was a key element to consider while choosing the application, as browser compatibility was an important requirement from the customer. The ability to create responsive designs was also a must-have functionality, as the customer wished for a design that can be easily accessible with all screen sizes.

The website was created using multiple Adobe CC applications – Adobe Muse CC, Adobe Photoshop CC, and Adobe Illustrator CC. The actual site structure was created using Adobe Muse CC, while the graphics were created in Photoshop and Illustrator. The graphics, such as the logo, slideshow images, and background images were created or modified in the previously mentioned programs and then imported to Muse and placed to desired locations on the design. The images were customized to fit the sites over-all design by converting them to black and white, and adding some contrast.

The actual site was built on Adobe Muse CC by first creating the design and site structure and then adding the desired texts in to place. The sites interactive elements were created by using the modifiable elements in the Widget Library. The Widget Library contains a multitude of basic elements that can be added to the design and modified to suit the designs individual needs. The elements utilized in this design were the slideshow, image gallery, contact form, and embedded Google Maps. The basic slideshow widget was very different from what the design was planned to contain, which means it had to be modified significantly in order to fit the design. After modifying the slideshow element to the desired state, the slideshows pictures were imported from Photoshop. Also the triggers on the slideshow had to be designed on Illustrator and then imported to Muse.

At the bottom of the website is a contact form which can be brought to life by easily incorporating Adobe Business Catalyst. It is a service that enables quick development of sever-side operations code-free. However, the client opted not to use the Business Catalyst as they plans to host the website using a private hosting service of their choice. Therefore, PHP was required to inject the website with some server-side dynamism; clients can directly contact the company but filling out the form at the bottom of the page and it is remitted to the specified email of the administrator. The code contains error-checking functionality to prevent errors and ultimately guide the client to correctly convey his or her message. The PHP code is demonstrated in Appendix 3.

In order to make the website responsive in Adobe Muse CC, it required individual designs for all three screen sizes – desktop, tablet, and mobile. The first design that was created was the desktop version, which was built to be compatible with all desktop resolutions. It was built according to a smaller screened computer display, so that the content will fit on smaller screens. The mobile versions design was created to match the desktop version, but was scaled to fit a smaller screen without compromising usability. This means the text size was kept large enough for a user to read it without having to zoom in on the browser. All the content that is showed on the desktop version is also visible on the mobile version, as I found it important that the mobile version should not restrict the user’s access to information. The same

principles were also followed on the tablet design. The finished desktop design is displayed in the Appendix 2.

11 Testing

The testing of the developed site concentrated on usability. The attributes that were considered were responivity, browser compatibility, and over all functionality of all elements. The sites functionalities, such as links, form, and slideshow were tested, to confirm that they work as anticipated. The site was viewed and the functionalities tested on all the required browsers, Mozilla Firefox, Internet Explorer, and Google Chrome, to ensure browser compatibility. Responsivity was tested by viewing the website on a mobile phone and tablet, to make sure the responsive design functions desireably. All the tested attributes worked as hoped, so no changes had to be made.

12 Future Prospective Development

To increase the company's visibility on the web, search engine optimization can be considered as a future development task. Search engine optimization increases the visibility of a website through search engine search results, which thereby enhances the company's visibility for the customers. As the company aims to attain a more steady stand in the market and attract new clients, search engine optimization helps to reach a wider range of potential customers.

Another appropriate task for consideration in future development is to incorporate web analytics to the website, as it provides the opportunity for efficiency mapping and thereby increases efficiency. Web analytics essentially measures web traffic, and allows data collection and analyzing in order to assess and improve the effectiveness of a website.

13 Conclusion

The goal of this thesis was to find modern web design trends, especially from the user interface perspective, and utilize them in creating a company website for a start-up company. The company is a recently founded start-up company, which provides its customers with services such as website creation and graphics.In the beginning the company did not have a website, which made it a perfect partner for the project, as it was in need of a well-structured, visually impressive, trendy site. The company had some requirements for the website, which were hoped to be combined with the discovered trends.

The modern trends were researched using benchmarking as a research method. To gain ample understanding of the trends among company sites in the industry, the research was conducted on a range of websites that are in the same field as the target company. The companies were chosen based on their current financial status, as the goal was to find the trends among successful companies in a specific field. All together six companies were studied in the research, three Finnish and three foreign, to gain understanding from a global perspective. The attributes that were taken under consideration were colors, over all style, interactivity, structure, and usability. The key usability attributes measured in this research were ease of navigation and browser support. The research resulted in clear similarities in all the researched sites and conclusions were easy to draw from the results. The gathered results were then combined with the existing requirements from Collins O. Consulting.

The creation of the website was planned and initiated based on the research results, which made the planning and development process simple and trouble free. During the project, the design and implementation was planned in cooperation with the customer, combining the research results with the company's requirements. The implementation of the website was conducted by using modern web design technologies, such as HTML5 and CSS3. It was executed utilizing Adobe CC applications – Muse CC, Photoshop CC, and Illustrator CC. To complete the development, it required knowledge of web design, web technologies, and graphic design skills.

As a result of adequate theory base and research, it was possible to create a company website that reflects modern web design trends. The development process went according to plans and the end product responded to the expectations of both the customer and student. As a whole, the project was very educational and insightful, as it gave the student precious knowledge and skills that are valuable in working life in the future.

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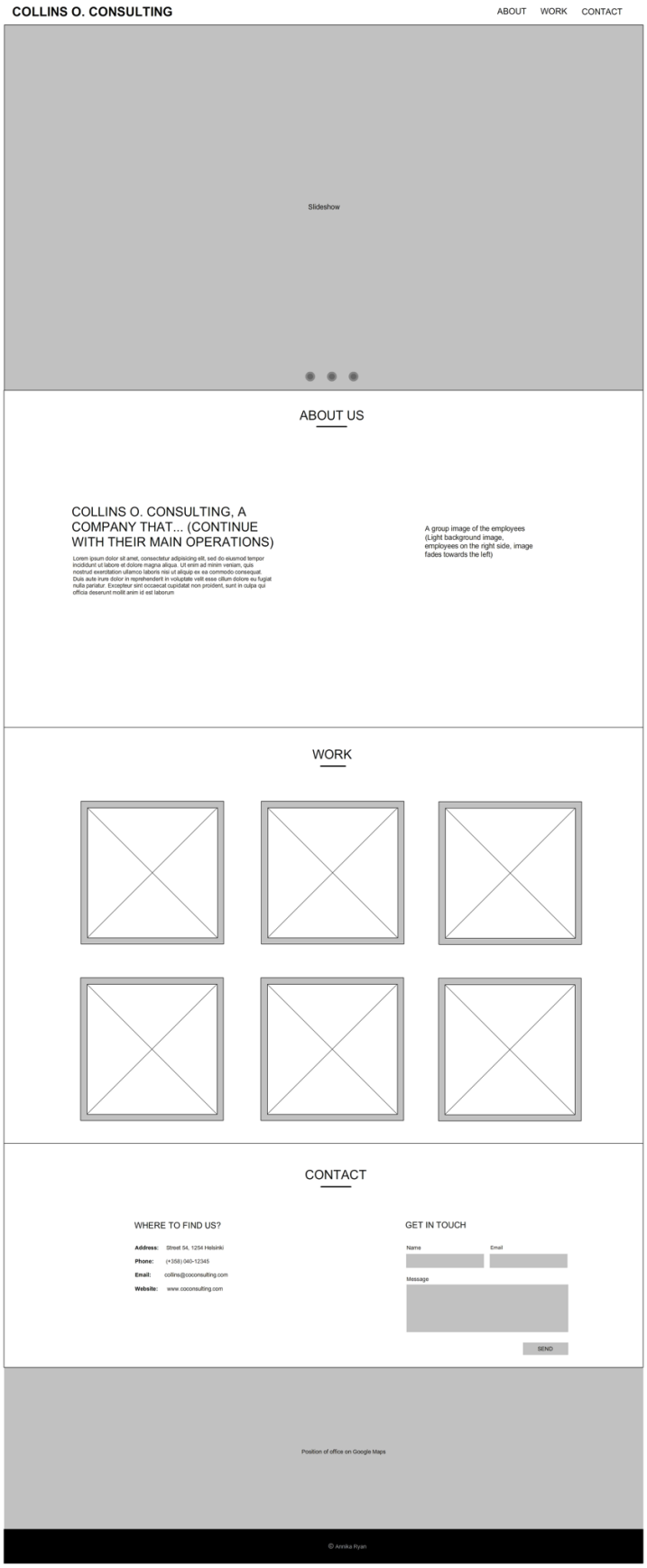
Illustrations

Tables

Appendixes

Appendix 1: Wireframe model of the developed website



Appendix 2: Finished website

Appendix 3: PHP code for the contact form

```
<?php
if(isset($_POST['email'])) {

    // MY INFO

    $email_to = "annikaryan8@gmail.com";

    $email_subject = "Web Contact";


    function died($error) {

        // ERROR MSG
        echo "We are very sorry, but there were error(s) found with the form you submitted. ";

        echo "These errors appear below.<br /><br />";

        echo $error."<br /><br />";

        echo "Please go back and fix these errors.<br /><br />";

        die();

    }

    // validation

    if(!isset($_POST['name']) ||

        !isset($_POST['email']) ||

        !isset($_POST['webmessage'])) {

        died('We are sorry, but there appears to be a problem with the form you submitted.');

    }
```

```
  $first_name = $_POST['name']; // required

  $email_from = $_POST['email']; // required

  $comments = $_POST['webmessage']; // required


  $error_message = "";

  $email_exp = '/^[A-Za-z0-9._%-]+@[A-Za-z0-9.-]+\.[A-Za-z]{2,4}$/';

if(!preg_match($email_exp,$email_from)) {

  $error_message .= 'The Email Address you entered does not appear to be valid.<br />';

}

  $string_exp = '/^[a-zA-Z0-9 ]*$/';

if(!preg_match($string_exp,$first_name)) {

  $error_message .= 'The First Name you entered does not appear to be valid.<br />';

}

if(strlen($comments) < 2) {

  $error_message .= 'The Comments you entered do not appear to be valid.<br />';
}

if(strlen($error_message) > 0) {

  died($error_message);

}
  $email_message = "Form details below.\n\n";


 function clean_string($string) {
```

```
    $bad = array("content-type","bcc:","to:","cc:","href");
    return str_replace($bad,"",$string);
  }
  $email_message .= "Name: ".clean_string($name)."\n";
  $email_message .= "Email: ".clean_string($email_from)."\n";
  $email_message .= "Comments: ".clean_string($comments)."\n";

// email headers
$headers = 'From: '.$email_from."\r\n".
'Reply-To: '.$email_from."\r\n" .
'X-Mailer: PHP/' . phpversion();
@mail($email_to, $email_subject, $email_message, $headers);
?>
Thank you for contacting us. We will be responding soonest.
<?php
}
?>
```